

THE TAXONOMIC PROBLEM OF SEXUAL DIMORPHISM IN SPIDERS AND A SYNONYMY IN *MYRMECOTYPUS* (ARANEAE, CLUBIONIDAE)¹

BY JONATHAN REISKIND
Biological Laboratories, Harvard University

With the major exception of many of the vertebrate groups, some mollusks, and butterflies, much of the current evolutionary work in zoology requires, concurrently, research at the "alpha" level of taxonomy in which species are characterized and named (Mayr, Linsley and Usinger, 1953). While this appears to be just a continuation of the work of Linnaeus, Clerck, and others it is by no means an old-fashioned, unchanging endeavor. With the advent of Darwin's theory and, later, the new systematics of the 20th century alpha taxonomy has continued to incorporate the most recent advances in evolutionary biology. Behavioral, ecological, distributional, physiological and biochemical characteristics must be utilized in this "lowest level" of taxonomy in addition to the traditional morphology. In this way the typological and morphological result of overlooking two sibling species or splitting a single species into two species can be avoided. An error of the latter type is often a result of sexual dimorphism.

In non-hermaphroditic, sexually reproducing organisms there usually exists some sort of morphological sexual dimorphism. Sometimes this is limited to the sexual structures themselves, but more often it is extended to secondary sexual characters. In spiders there are three types of secondary characters. Type one is intimately involved in the physical act of copulation and is represented by the pedipalps of males which are modified into organs for the transference of seminal fluid to the female during mating. Type two is associated with the courtship before mating which includes the bizarre and colorful structures that are observed in the Salticidae (especially the males) as well as the size differences in certain argiopoid groups. All structures resulting from sexual selection or reproductive requirements fall into this second type. Type three is unrelated to the procreative process and includes size, color and shape differences whose origins are either due to non-sexual selection or possible pleiotropic effects.

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The problem that results from this dimorphism is that of properly pairing the male and female of the same species. With the rare exception of finding two spiders *in copula* or, in some Araneidae for example, finding the apical tip of the embolus broken off inside the seminal receptacle of the female, this problem must be solved indirectly. This is the point at which a taxonomist's intuition or reason is required. In addition to the comparison of the two adult sexes the use of the immature forms may now come in use. Many araneologists consider pre-adult forms (i.e. those lacking male palpi or epigyna) to be taxonomically useless. But the external morphology of the immatures will be less affected by the strong sexual dimorphism found in many adults and therefore exhibit the more stable characters in the species.

In a recent article (Unzicker, 1965) two new species of *Myrmecotypus* were described. Each one was described from a single specimen: *M. rettenmeyeri* Unzicker from a male, and *M. discreta*

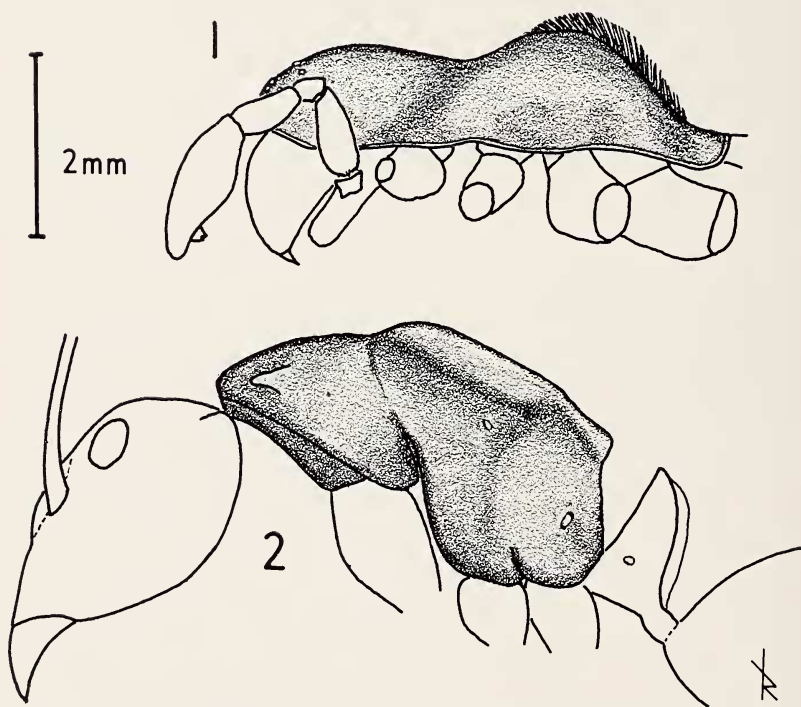


Fig. 1. Lateral view of *Myrmecotypus rettenmeyeri* Unzicker.

Fig. 2. Lateral view of *Camponotus sericeiventris* (Guérin).

Unzicker from a female. Both species were collected at the same locality, in the same way, within three days of one another. The two spiders are almost identical with the obvious exception of sexual structures. Hence it is strongly suggested that *M. discreta* is the synonym of *M. rettenmeyeri*. In addition, examination of an immature specimen of this species reveals a basic external morphology and color pattern that is in common with both adults. This species does not exhibit as much sexual dimorphism as in many other members of the Micariinae where the immature forms are even more useful.

Often a species can be properly delimited only after some contact with the living form in its natural habitat. Both *M. rettenmeyeri* and *M. discreta* have a strange "longitudinal band of black hairs extending along midline of cephalothorax from dorsal depression to base of constriction at posterior end" (Unzicker, 1965) (see Fig. 1). From observations and collections made by Dr. A. M. Chickering at the type locality in Panama it appears that in both sexes the band of hair enhances the resemblance to the ant *Camponotus sericeiventris* (Guérin) with which they share the same habitat. The crests of black hairs correspond to the solid longitudinal keel-like dorsal extensions of the posterior sections of the thorax of *C. sericeiventris* (Fig. 2). The chances that two spiders in the same genus imitate the same ant at the same place and time are ecologically improbable. This is strong additional evidence supporting the synonymy of two species.

To summarize, "alpha taxonomy" is presently a dynamic science incorporating many new techniques. Sexual dimorphism presents the problem of inadvertant splitting of species which can often be avoided by the use of careful comparisons as well as immature stages and field observations. Using these methods *Myrmecotypus discreta* is found to be the female form of *M. rettenmeyeri*. As first reviser I select *M. rettenmeyeri* as the valid name.

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REFERENCES

- MAYR, E., E. G. LINSLEY, AND R. L. USINGER.
1953. *Methods and Principles of Systematic Zoology*. McGraw-Hill, New York, 336 pp.
- UNZICKER, J. D.
1965. Two New Species of the Genus *Myrmecotypus* from Central America (Clubionidae: Araneae). *Journ. Kansas Ent. Soc.* 38 (3):253-257.